

U.S. Geological Survey Consists of Four Disciplines

- Geology
- Biology
- Water Resources
- Geography

USGS Activities – Water Availability

- **Ground Water – Regional Analysis**
- **Ground Water – Near Shore**
- **Aquifer Mapping**
- **Surface-Water Models**
- **Water Use Data**

USGS Activities – Non-point Source Pollution

- **National Water Quality Assessment Program**
 - **Western Lake Michigan Drainages**
 - **Lake Erie – Lake St. Clair Drainages**
 - **Mercury topical study**
 - **Regional synthesis of gw quality for Glacial Aquifers**
 - **Adjacent studies – Upper Illinois, Miami Rivers**
- **Cooperative Water Projects**

USGS Activities – PBT Reduction

- **Mercury accumulation in aquatic organisms**
- **Sources and transport of agricultural chemicals**
- **Effects of urbanization on stream ecosystems**
- **Emerging contaminants**
- **Estimation of PCB loads from the Black River to Lake Ontario**

USGS Activities – Invasive Species

- *Sea Lamprey – Hammond Bay Biological Station with GLFC and FWS*
- *Research on Invasives – especially impact on native species*
- *Research on remediation and restoration of native species – Lake Sturgeon with FWS*
- *Research methods to keep out invasives – help to test Carp Barrier*

USGS Activities – Habitat/Species

Long-term fishery research and fish-stock assessments

- Deepwater fisheries program
- Fisheries restoration research
- Genetic evaluation of key fish species
- Ecological risk assessment in AOC's
- Research on restoration of native species
 - Lake Sturgeon, shortjaw cisco, freshwater mussels

USGS Activities – Habitat/Species

- **Ecosystem needs in Lake Erie/Lake Huron corridor**
- **Relation of nearshore to offshore species**
- **Wetland and Coastal Habitats**
 - **Research on wetland restoration and lake levels**
 - **Global climate change effects on wetlands**
 - **Research on Metzger Marsh Restoration with FWS and Ohio Division of Wildlife**

USGS Activities - AOC's/Sediment

- **Research on exposure and toxicity of contaminants, especially fish**
- **Mapping contaminated sediments and fish tissue – Lake Erie and Lake St. Clair**
- **Hydraulic model of flow in the Lake Huron/Lake Erie corridor**
- **Chemical transport and Confined Disposal Facilities**

USGS Activities – Indicators and Information

- **Surface-water gaging stations**
- **Ground-water monitoring**
- **Water-quality monitoring**
- **Inland lake-level monitoring and lake studies**
- **Fish data bases**
- **Aquatic and Terrestrial GAP analysis data**
- **Non-renewable resources data**
- **Geographic data**

USGS Activities – Sustainable Development

- **Water-use data**
- **Aquifer mapping**
- **Water availability for development**
- **Effects of water withdrawal on ecosystem function**
- **Land use effects on water quality**

USGS Activities – Coastal Health

- Development of forecasting models to predict beach closing (Lakes Michigan and Erie)
- Application of DNA analyses to detect pathogens on beaches
- Develop real-time data bases for public advisories
- Rapid detection techniques